APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/980,226	11/30/2001	Wataru Matsumoto	2611-0165P	1326

			EXAMINER
2292	7590	03/31/2004	TORRES, JOSEPH D

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ART UNIT	PAPER NUMBER
2133	7

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Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.		Applicant(s)
Office Action Summary	09/980,226		MATSUMOTO, WATARU
	Examiner		**Art Unit**
	Joseph D. Torres		2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 March 2002*.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 November 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☒ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☒ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3</u>.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Priority

1.   Acknowledgment is made of applicant's claim for foreign priority based on an

application filed in Japan on 31 March 2000. It is noted, however, that applicant has not

filed a copy of the certified copy of the Japanese application as required by PCT Rule

17.2(a).

Drawings

2.   The drawings are objected to because the drawing include misspelled words,

e.g. "scalling" in Figure 2 and 3, and "colum" in Figures 12, 16, 17 and 18. A proposed

drawing correction or corrected drawings are required in reply to the Office action to

avoid abandonment of the application. The objection to the drawings will not be held in

abeyance.

Specification

3.   A substitute specification including a substitute abstract and a new corrected title

without the claims is required pursuant to 37 CFR 1.125(a) because the specification,

abstract and title appear to be a literal translation into English from a foreign document

and is replete with grammatical and idiomatic errors.

For example lines 24-25 of page 10 and lines 1-3 of page 11 recite, "a rearrangement

unit which generates N types of random series by arranging random series generated

with prime numbers in a buffer of N (where N is a natural number) rows x M (where M is

a natural number) columns and rearranging bits in rows with the above random series"

(Note: the Applicant's Abstract recites similar language that must be corrected). It is not

clear what the relationship between "N types of random series" and N rows is. In the

statement, "generates N types of random series by arranging random series", it is not

clear what the relationship between the generated "random series" and the arranged

"random series" is and whether they are two distinct "random series" or the same

"random series".

In addition, nowhere in the application does the applicant define "inter-signal-point

distance".

A substitute specification filed under 37 CFR 1.125(a) must only contain subject matter

from the original specification and any previously entered amendment under 37 CFR

1.121. If the substitute specification contains additional subject matter not of record, the

substitute specification must be filed under 37 CFR 1.125(b) and (c)

Claim Objections

4.   Claims 1-8 are objected to because of the following informalities: Claim 1 recites

the following three limitations:

> a. "generates N types of random series by arranging random series generated
>
>   by using prime numbers in a buffer of N (where N is a natural number) rows x
>
>   M (where M is a natural number) columns and rearranging bits in rows by
>
>   using the random series"

b. "maps interleaver-length data series on the rearranged N types of random

series"

c. "generates a final rearrangement pattern by replacing rows in the mapped

data series in accordance with a predetermined rule".

Limitations b and c appear to be more general statements of limitation a and do not

appear to further limit limitation a. The claim language must be rewritten to clarify what

the Applicant considers his invention deleting all superfluous language in the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5.   Claims 2, 4, 6 and 8 are rejected under 35 U.S.C. 112, first paragraph, as failing

to comply with the enablement requirement. The claim(s) contains subject matter which

was not described in the specification in such a way as to enable one skilled in the art to

which it pertains, or with which it is most nearly connected, to make and/or use the

invention. Nowhere in the application does the applicant define "inter-signal-point

distance". The Examiner assumes the following was intended –Hamming distance--.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6.   Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention.

The claims are generally narrative and indefinite, failing to conform with current U.S.

practice. They appear to be a literal translation into English from a foreign document

and are replete with grammatical and idiomatic errors.

For example: claim 1 recites, "generates N types of random series by arranging random

series generated by using prime numbers in a buffer of N (where N is a natural number)

rows X M (where M is a natural number) columns and rearranging bits in rows by using

the random series". It is not clear what the relationship between "N types of random

series" and N rows is. In the statement, "generates N types of random series by

arranging random series", it is not clear what the relationship between the generated

"random series" and the arranged "random series" is and whether they are two distinct

"random series" or the same "random series". Claim 1 recites the limitation "the

rearranged N types of random series" in lines 9-10. There is insufficient antecedent

basis for this limitation in the claim.

Claim 1 recites the limitation "the mapped data series" in line 12. There is insufficient

antecedent basis for this limitation in the claim.

Claim 1 recites the limitation "the generated rearrangement" in line 14. There is

insufficient antecedent basis for this limitation in the claim.

Claims 3, 5 and 7 recite similar language as in claim 1.

Claims 2, 4, 6 and 8 depend from respective independent claims 1, 3, 5 and 8; hence

inherit the deficiencies in claims 1, 3, 5 and 8.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7.   Claims 1-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Kim; Min-

Goo et al. (US 6598202 B1, hereafter referred to as Kim).

35 U.S.C. 102(e) rejection of claim 1.

Kim teaches a communication apparatus comprising a turbo encoder, wherein said

turbo encoder includes a rearrangement unit (see Title in Kim; Note: an interleaver is a

rearrangement unit) which, generates N types of random series by arranging random

series generated by using prime numbers in a buffer of N (where N is a natural number)

rows X M (where M is a natural number) columns and rearranging bits in rows by using

the random series (in col. 10, lines 5-35 of Kim, steps B-2, B-3 and B-4 are steps for

generating N=R types of random series by arranging random series C(i) generated by

using prime numbers, p, in a buffer of N=R rows X M=C columns and rearranging bits in

rows by using the random series, $C_j(i)$; Note: the memory of claim 2 provides an R x C

buffer array for implementing the algorithm); maps interleaver-length data series on the

rearranged N types of random series (in col. 10, lines 1-5 and 25-35 of Kim teaches that

interleaver-length data series is mapped according to the rearranged N types of random

series $C_j(i)$); generates a final rearrangement pattern by replacing rows in the mapped

data series in accordance with a predetermined rule (the modulo formula of Step B-5 in

col. 10. lines 25-35 is a predetermined rule for generating a final rearrangement pattern

by replacing rows in the mapped data series); and reads the generated rearrangement

pattern in columns (Figure 10 in Kim teaches that the interleaver reads randomized data

out in columns).

35 U.S.C. 102(e) rejection of claim 2.

Col. 1, lines 60-65 in Kim teach that when turbo code interleavers are implemented that

the distance property of the codes is maintained.

35 U.S.C. 102(e) rejection of claim 3.

Kim teaches a communication apparatus comprising a turbo encoder, wherein said

turbo encoder includes a rearrangement unit (see Title in Kim; Note: an interleaver is a

rearrangement unit) which, generates N types of random series by arranging random

series generated by using prime numbers in a buffer of N (where N is a natural number)

rows X M (where M is a natural number) columns and rearranging bits in rows by using

the random series (in col. 10, lines 5-35 of Kim, steps B-2, B-3 and B-4 are steps for

generating N=R types of random series by arranging random series C(i) generated by

using prime numbers, p, in a buffer of N=R rows X M=C columns and rearranging bits in

rows by using the random series, $C_j(i)$; Note: the memory of claim 2 provides an R x C

buffer array for implementing the algorithm); maps interleaver-length data series on the

shifted N types of random series (in col. 10, lines 1-5 and 25-35 of Kim teaches that

interleaver-length data series is mapped according to the rearranged N types of random

series $C_j(i)$; Note: the modulo formula of in Step B-5 in col. 10. lines 25-35 is used for

shifting data); generates a final rearrangement pattern by replacing rows in the mapped

data series in accordance with a predetermined rule (the modulo formula of in Step B-5

in col. 10. lines 25-35 is a predetermined rule for generating a final rearrangement

pattern by replacing rows in the mapped data series); and reads the generated

rearrangement pattern in columns (Figure 10 in Kim teaches that the interleaver reads

randomized data out in columns).

35 U.S.C. 102(e) rejection of claim 4.

Col. 1, lines 60-65 in Kim teach that when turbo code interleavers are implemented that

the distance property of the codes is maintained.

35 U.S.C. 102(e) rejection of claim 5.

Kim teaches a communication apparatus comprising a turbo encoder, wherein said

turbo encoder includes a rearrangement unit (see Title in Kim; Note: an interleaver is a

rearrangement unit) which, generates N types of random series by arranging random

series generated by using prime numbers in a buffer of N (where N is a natural number) rows X M (where M is a natural number) columns and rearranging bits in rows by using the random series (in col. 10, lines 5-35 of Kim, steps B-2, B-3 and B-4 are steps for generating N=R types of random series by arranging random series C(i) generated by using prime numbers, p, in a buffer of N=R rows X M=C columns and rearranging bits in rows by using the random series, $C_j(i)$; Note: the memory of claim 2 provides an R x C buffer array for implementing the algorithm); maps interleaver-length data series on the shifted N types of random series (in col. 10, lines 1-5 and 25-35 of Kim teaches that interleaver-length data series is mapped according to the rearranged N types of random series $C_j(i)$; Note: the modulo formula of in Step B-5 in col. 10. lines 25-35 is used for shifting data); generates a final rearrangement pattern by replacing rows in the mapped data series in accordance with a predetermined rule (the modulo formula of in Step B-5 in col. 10. lines 25-35 is a predetermined rule for generating a final rearrangement pattern by replacing rows in the mapped data series); and reads the generated rearrangement pattern in columns (Figure 10 in Kim teaches that the interleaver reads randomized data out in columns).

35 U.S.C. 102(e) rejection of claim 6.
Col. 1, lines 60-65 in Kim teach that when turbo code interleavers are implemented that the distance property of the codes is maintained.

35 U.S.C. 102(e) rejection of claim 7.

Kim teaches a communication apparatus comprising a turbo encoder, wherein said

turbo encoder includes a rearrangement unit (see Title in Kim; Note: an interleaver is a

rearrangement unit) which, generates N types of random series by arranging random

series generated by using prime numbers in a buffer of N (where N is a natural number)

rows X M (where M is a natural number) columns and rearranging bits in rows by using

the random series (in col. 10, lines 5-35 of Kim, steps B-2, B-3 and B-4 are steps for

generating N=R types of random series by arranging random series C(i) generated by

using prime numbers, p, in a buffer of N=R rows X M=C columns and rearranging bits in

rows by using the random series, $C_j(i)$; Note: the memory of claim 2 provides an R x C

buffer array for implementing the algorithm); maps interleaver-length data series on the

shifted N types of random series (in col. 10, lines 1-5 and 25-35 of Kim teaches that

interleaver-length data series is mapped according to the rearranged N types of random

series $C_j(i)$; Note: the modulo formula of in Step B-5 in col. 10. lines 25-35 is used for

shifting data); generates a final rearrangement pattern by replacing rows in the mapped

data series in accordance with a predetermined rule (the modulo formula of in Step B-5

in col. 10. lines 25-35 is a predetermined rule for generating a final rearrangement

pattern by replacing rows in the mapped data series); and reads the generated

rearrangement pattern in columns (Figure 10 in Kim teaches that the interleaver reads

randomized data out in columns).

35 U.S.C. 102(e) rejection of claim 8.

Col. 1, lines 60-65 in Kim teach that when turbo code interleavers are implemented that the distance property of the codes is maintained.
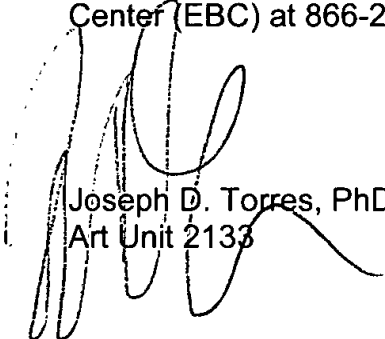
Conclusion

8.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Li; Bin et al. (US 6543013 B1) teaches interleavers for performing code modulation. Suda; Hirohito et al. (US 6553516 B1) teaches an interleaving method, an interleaving apparatus, a turbo encoding method, and a turbo encoder in which pruning is not performed at all or only a small number of bits is pruned away, so that computational complexity can be reduced. Shibutani, A.; Suda, H.; Adachi, F.; Complexity reduction of turbo decoding; IEEE Vehicular Technology Conference, 19-22 Sept. 1999, Pages: 1570-1574, vol.3.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (703) 308-7066. The examiner can normally be reached on M-F 8-5.
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (703) 305-9595. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published

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more information about the PAIR system, see http://pair-direct.uspto.gov. Should you

have questions on access to the Private PAIR system, contact the Electronic Business

Center (EBC) at 866-217-9197 (toll-free).

Joseph D. Torres, PhD
Art Unit 2133